Brownsville, Tex., 4° above record of 1884; San Diego, Cal., 2° above record of 1883; Sacramento, Cal., and Olympia, Wash., 1° above record of 1888. The most notable deficiencies occurred in the middle Atlantic states, the upper Mississippi and Missouri valleys, the upper lake region, and over the southern plateau, where, at stations, the maximum temperatures were 20°, or more, below the maximum values for the corresponding month of previous years.

The lowest temperatures in the United States were reported in the valley of the Red River of the North, where a reading of —43° was noted at Saint Vincent, Minn. The temperature fell below —30° over northern Minnesota, northern Dakota, and northeastern Montana. A reading of —32° was reported at Northfield, Vt. The minimum temperature fell to zero at stations north of an almost direct line traced from southern New England to central Arizona, and east of a line traced irregularly northward from central Arizona to northwestern Montana.

Unusually low temperatures have not been reported, and at a large majority of stations the minimum readings were considerably above the lowest values previously noted for February, notably in the northern and middle plateau regions of the Rocky Mountains and along the north Pacific coast, where, at stations, the minimum temperature was 20° to 30° above the lowest February values of previous years.

RANGES OF TEMPERATURE.

The greatest and least daily ranges of temperature at Signal Service stations are given in the table of miscellaneous meteorological data. The greatest monthly ranges occurred over northern Minnesota, northern Dakota, and northeastern Montana, where they exceeded 80°. From this region the ranges decreased westward to the Pacific coast, where they were less than 30° over western Washington, and eastward to the Atlantic, where they amounted to less than 50° on the south New England coast. The monthly ranges also decreased from Montana southward to the Mexican border, where they averaged about 50°; southeastward to southern Florida, where they fell below 30°; and southwestward to west-central California, where they were less than 40°.

The following are some of the extreme monthly ranges:

Greatest.	°	Least.	°
Poplar River, Mont	92.0	Key West, Fla	25.0
Fort Assinaboine, Mont	84.0	Port Angeles, Wash.	25.0
Duluth, Minn	83.0	Galveston, Tex	27.0
Bismarck, Dak	82.0	San Francisco, Cal	36.0
Valentine, Nebr	81.0	Salt Lake City, Utah	43.0
Northfield, Vt.	80.0	Fort Grant, Ariz	43.0

LIMITS OF FREEZING WEATHER.

The southern and western limits of freezing weather for February, 1889, are shown on chart v. A line representing the southern limit is traced from the eastern coast of Florida, in about lat. N. 30°, westward through New Orleans, La., to south-central Texas, and thence south of west into the middle Rio Grande valley. A line indicating the western limit is traced from southwestern Arizona irregularly northwestward through California to the coast in about lat. N. 39°. As compared with lines representing similar data, traced for the preceding month, a southward advance of freezing weather is shown along the middle and east Gulf coasts and in the Colorado Valley. In southeastern Texas the line for February trends more to the northward. On the Pacific coast the limit of freezing weather remains about the same as in January, 1889.

FROST.

As compared with the preceding month the southern limit of frost in Florida has changed but slightly; no frost was, however, reported in the state west of the eighty-second meridian, whereas in January it was noted along the Gulf coast as far south as Manatee county. Along the middle Gulf coast frost occurred frequently during both January and February, while along the west Gulf coast and in southern Texas the southern limit in February was about five degrees farther north than in the preceding month. In southwest California south of the thirty-fifth parallel frost was reported on the 1st, 6th to 8th, 15th to 19th, and 27th.

TEMPERATURE OF WATER.

The following table shows the maximum, minimum, and mean water temperature as observed at the harbors of the several stations; the monthly range of water temperature; and the mean temperature of the air for February, 1889:

Stations.	Temperature at bottom.				Mean temperature of air at the station.
	Max.	Min.	Range.	Monthly mean.	
	°	°	°	°	°
Canby, Fort, Wash	48.8	44.3	4.5	46.4	45.2
Cedar Keys, Fla	69.8	48.1	21.7	58.3	54.0
Charleston, S. C	54.0	48.2	5.8	50.3	47.4
Eastport, Me	37.3	36.0	1.3	36.7	20.0
Galveston, Tex	63.0	50.0	13.0	54.6	54.4
Key West, Fla	77.2	67.3	9.9	71.5	69.4
New York City	36.0	30.0	6.0	32.3	28.0
Pensacola, Fla	59.0	51.0	8.0	55.4	51.9
Portland, Oregon	44.0	39.0	5.0	42.1	44.2

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for February, 1889, as determined from the reports of nearly 1,500 stations, is exhibited on chart iii. In the table of miscellaneous meteorological data are given, for each Signal Service station, the total precipitation, with the departure from the normal. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

The precipitation for February was below the normal in the plateau and Pacific coast regions, west Gulf states, and, with the exception of a slight excess in the upper lake region and south Atlantic states, in all districts east of the Mississippi River. In those districts where the precipitation was deficient the percentages of the normal were about as follows: Northern plateau, 7; middle Pacific coast region, 16; southern California, Oregon, and Washington Territory, from 41 to 44; middle plateau region, 48; New England, lower lake region, upper Mississippi and Ohio valleys, Gulf States, and southern plateau, from 58 to 67; middle Atlantic states, 83; and Florida, 92. It will thus be seen that the deficiency was greatest in the northern and central plateau regions and on the Pacific coast, where, as a whole, there was less than one-third of the normal precipitation for February.

Over the eastern Rocky Mountain slope, extreme northwest, Missouri and Rio Grande valleys, and, as previously stated, in the upper lake region and south Atlantic states, the precipitation of February was above the normal. It exceeded the normal by about 40 per cent. over the eastern Rocky Mountain slope, and in the lower Rio Grande valley there was more than double the normal amount. In other districts where there was an excess the departures were not marked.

With respect to the marked deficiency of rainfall on the Pacific coast the months of January and February were not unlike, and therefore the aggregate rainfall for these months in that region was unusually small. There was, however, in California a decided excess over the normal in both November and December, 1888, but on the north Pacific coast a marked

deficiency occurred in December with scarcely the normal amount for November.

DEVIATIONS FROM AVERAGE PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for a series of years; (2) the length of record during which the observations have been taken, and from which the average has been computed; (3) the total precipitation for February, 1889; (4) the departure of the current month from the average; (5) and the extreme monthly precipitation for February during the period of observation and the years of occurrence:

State and station.	County.	(1) Average for the month of Feb.	(2) Length of record.	(3) Total for Feb., 1889.	(4) Departure from average.	(5) Extreme monthly precipitation for February.			
						Greatest.		Least.	
						Am't.	Year.	Am't.	Year.
Arkansas.		*Inches*	*Years*	*Inches*	*Inches.*	*Inches*		*Inches.*	
Lead Hill	Boone	5.44	7	2.87	−2.57	10.93	1884	1.47	1885
California.									
Sacramento	Sacramento	2.81	39	0.42	−2.39	8.50	1854	0.12	1852
Colorado.									
Fort Lyon	Bent	0.19	15	T.	−0.19	0.86	1874	0.00	1878, 1880, 1886
Connecticut.									
Middletown	Middlesex	4.10	26	1.81	−2.29	7.56	1887	1.14	1877
Florida.									
Merritt's Island	Brevard	2.77	11	4.96	+2.19	6.01	1888	0.15	1882
Georgia.									
Forsyth	Monroe	4.20	15	6.74	+2.54	7.90	1882	1.19	1879
Illinois.									
Peoria	Peoria	2.11	33	0.84	−1.27	5.45	1887	0.06	1877
Riley	McHenry	2.11	38	1.21	−0.90	6.00	1862, '65	0.03	1877
Indiana.									
Logansport	Cass	4.10	13	1.99	−2.11	9.01	1857	0.15	1868
Vevay	Switzerland	3.73	23	1.47	−2.26	10.23	1884	0.40	1877
Iowa.									
Cresco	Howard	1.01	17	0.56	−0.45	1.88	1887	0.07	1877
Monticello	Jones	1.92	36	0.79	−1.13	4.62	1887	0.32	1877
Logan	Harrison	1.42	21	T.	−1.42	5.30	1881	T.	1889
Kansas.									
Lawrence	Douglas	1.23	23	2.20	+0.97	4.60	1881	0.03	1870
Wellington	Sumner	1.12	10	1.00	−0.12	3.73	1883	0.15	1879
Louisiana.									
Grand Coteau	St. Landry	3.01	6	1.53	−1.48	7.44	1888	1.37	1886
Maine.									
Gardiner	Kennebec	3.55	49	1.84	−1.71	9.47	1853	0.58	1877
Maryland.									
Cumberland	Allegany	2.48	16	2.07	−0.41	4.93	1882	0.60	1877
Massachusetts.									
Amherst	Hampshire	3.19	54	1.46	−1.73	6.69	1853	0.36	1877
Newburyport	Essex	4.52	10	2.30	−2.22	6.75	1886	2.30	1889
Somerset	Bristol	3.92	16	2.12	−1.80	8.70	1886	1.00	1877
Michigan.									
Kalamazoo	Kalamazoo	2.83	13	1.35	−1.48	5.44	1881	0.12	1877
Thornville	Lapeer	2.16	12	1.17	−0.99	4.08	1884	0.00	1877
Minnesota.									
Minneapolis	Hennepin	1.14	23	1.36	+0.22	2.80	1869	T.	1877
Montana.									
Fort Shaw	Lewis&Clarke	0.39	19	0.70	+0.31	1.04	1886	0.05	1877
New Hampshire.									
Concord	Merrimack	3.04	8	1.53	−1.51	5.55	1876	0.40	1883
New Jersey.									
Moorestown	Burlington	3.45	26	2.27	−1.18	6.02	1886	0.53	1877
South Orange	Essex	3.77	18	2.49	−1.28	6.10	1881	1.10	1877
New York.									
Cooperstown	Otsego	2.15	35	1.79	−0.36	5.21	1887	0.60	1856
Palermo	Oswego	2.85	35	2.83	−0.02	7.20	1866	0.10	1877
North Carolina.									
Lenoir	Caldwell	4.29	17	2.40	−1.89	9.00	1873	0.60	1877
Ohio.									
N. Lewisburgh	Champaign	3.23	17	0.90	−2.33	8.20	1883	0.35	1872
Wauseon	Fulton	3.01	15	1.77	−1.24	7.19	1887	0.12	1877
Oregon.									
Albany	Linn	6.49	11	0.95	−5.54	13.08	1881	0.95	1889
Eola	Polk	5.59	19	0.35	−5.24	13.24	1872	0.35	1889
Pennsylvania.									
Dyberry	Wayne	2.68	23	2.10	−0.58	5.59	1884	0.60	1877
Grampian Hills	Clearfield	3.43	17	1.96	−1.47	7.62	1887	1.56	1872
Wellsborough	Tioga	6.59	9	2.98	−3.61	10.93	1884	0.95	1887
South Carolina.									
Statesburgh	Sumter	2.47	7	5.47	+3.00	5.47	1889	1.18	1883
Tennessee.									
Austin	Wilson	5.38	20	3.71	−1.67	12.57	1887	0.75	1868
Milan	Gibson	5.08	5	1.31	−3.77	7.96	1884	1.31	1889
Texas.									
Fort Concho	Tom Green	0.85	16	2.57	+1.72	3.38	1882	0.00	1879, 1881
New Ulm	Austin	4.54	16	2.73	−1.81	10.90	1882	1.06	1885
Vermont.									
Strafford	Orange	2.76	15	3.25	+0.49	5.90	1887	0.30	1877
Virginia.									
Bird's Nest	Northampton	3.65	20	5.80	+2.15	6.55	1884	1.40	1877
Wytheville	Wythe	3.32	24	3.30	−0.02	8.00	1862	0.30	1877
Wisconsin.									
Madison	Dane	1.72	24	1.84	+0.12	7.90	1869	0.30	1877
Washington.									
Fort Townsend	Jefferson	1.90	14	0.54	−1.36	3.94	1879	0.37	1886

HAIL.

Hail occurred during February, as follows: 4th, Independence, Iowa. 5th, Cornish, Me. 8th, Nashville, Tenn. 11th, Banning, Cal. 13th, Albany, Astoria, and Mount Angel, Oregon; Port Angeles, Wash.; Embarrass, Wis. 14th, Fort Bowie and Phœnix, Ariz. 15th, Tucson, Ariz.; Fresno, Cal.; Ypsilanti, Mich.; Wauseon, Ohio. 16th, Sacramento, Cal.; Elkader, Iowa; Leavenworth, Kans.; Cornish, Me.; Ironton, Mo.; Berlin Mills, N. H.; Factoryville and Nineveh, N. Y.; Wauseon, Ohio. 17th, New Market, Ala.; Chattanooga, Tenn. 18th, Holyoke and Westborough, Mass.; Albany, Ardenia, and Boyd's Corners, N. Y.; Cedar Springs, S. C. 19th and 20th, Quitman, Ga. 21st, Forsyth and Hephzibah, Ga. 26th, Washington, N. C. 27th, Vevay, Ind.; Frederick, Md. 28th, Jewell, Md.; Dale Enterprise, Va.

SLEET.

Sleet occurred during February as follows: 1st, Blue Hill Observatory and Dudley, Mass; Walla Walla, Wash. 3d, Delphi, Ind. 4th, New London, Conn.; Saint Louis, Mo. 5th, Eastport, Me.; Fox Creek, Mo.; Geneva, Oswego, and Utica, N. Y. 6th, Dudley, Mass. 7th, Cairo and McLeansborough, Ill.; Franklin, Ind.; Walla Walla, Wash. 8th, Cairo and Irishtown, Ill.; Cedar Springs, S. C.; Chattanooga and Milan, Tenn. 10th, Louisville, Palo Alto, and University, Miss. 11th, Fort Buford, Dak.; Augusta, Ga.; Southport, N. C.; Cape Henry, Va. 13th, Fort Yates, Dak.; Sheldon, Mont.; Embarrass, Wis. 14th, Whipple Barracks, Ariz.; Dwight, Ill.; Wesley, Iowa; North Loup, Nebr. 15th, Chicago and Watseka, Ill.; Angola, Ind.; Clear Lake, Davenport, Webster City, and Wesley, Iowa; Detroit and Marquette, Mich.; Duluth, Minn.; Columbus and West Milton, Ohio; San Antonio, Tex.; Milwaukee, Oshkosh, and Weston, Wis. 16th, Lewis Creek, Cal.; New Hartford, Conn.; Kirkwood, Del.; Des Moines, Fayette, and Oskaloosa, Iowa; Bendena, Globe, La Harpe, Leoti, and Yates Centre, Kans.; Holyoke, Mass.; Detroit and Sault de Ste. Marie, Mich.; University, Miss.; Oregon, Mo.; Manchester and North Sutton, N. H.; Humphrey and Palermo, N. Y.; Le Roy, Reading, and Wellsborough, Pa.; Northfield, Vt.; Lynchburgh, Va.; Hartmonsville, W. Va. 17th, Cairo and Golconda, Ill.; New Providence, Ind.; Fort Reno, Ind. T.; University, Miss.; Kidder and Springfield, Mo.; Locktown, N. J.; Northfield, Vt. 18th, New Hartford, Conn.; Blue Hill Observatory and Holyoke, Mass.; Geneva and Oswego, N. Y.; Columbus and Garrettsville, Ohio; Hartmonsville, W. Va. 20th, Mobile, Ala.; Mandeville, Mount Airy, and New Orleans, La.; Pearlington, Miss.; Washington, N. C. 21st, Mongomery, Ala.; Augusta, Milledgeville, and Savannah, Ga.; Southport, N. C. 22d, Kidder, Mo.; Elyria, Ohio. 23d, Colorado Springs, Colo.; Kidder, Mo.; Westerville, Ohio. 24th, Santa Maria, Cal. 25th, Santa Maria, Cal.; Old Duquoin, Ill.; Saint Louis and Springfield, Mo.; Fort Elliott, Tex. 26th, Fort Collins, Colo.; Cairo, Charleston, and Greenville, Ill.; De Gonia Springs, Ind.; Mount Saint Mary's, Md.; Ironton, Mo.; Washington and Wilmington, N. C.; Garrettsville, Ohio. 27th, Fort Collins, Colo.; New Hartford, Conn.; Washington City; Baltimore, Md.; Geneva and New York City, N. Y.; Hartmonsville, W. Va. 28th, North Billerica, Mass.

SNOW.

There were no dates during February on which snow did not fall in Vermont and New York. In Pennsylvania and Ohio there was but one day on which it did not occur. With the exception of the 14th and 28th, snow was of daily occurrence in Michigan, and it fell on from twenty to twenty-four days during the month in Montana, Dakota, Minnesota, Wisconsin, Kansas, Missouri, West Virginia, Massachusetts, New Hampshire, and Maine. It was least extensively reported on the 1st and 2d, and most extensively reported on the 8th, 24th, and 25th. The southernmost latitude, about 32°, was reached on the 20th and 21st, being about two degrees north of the southern limit for the previous month.

MONTHLY SNOWFALLS (inches and tenths) FEBRUARY, 1889.

The monthly snowfall of February exceeded twenty inches over a considerable portion of the Lake region and New England, and in a few cases some remarkably large falls were recorded. Stations in Michigan, northern New York, and northern New England report more than forty inches, and extreme depths of 69.6 and 71.4 were recorded, respectively, at Barnes' Corners and Lowville, in Lewis Co., New York. Along the Atlantic coast, south of New England, the monthly falls reached six inches in but few instances, and for the most part ranged between one and four inches. Over a narrow area extending from northern Georgia northeastward to West Virginia the monthly falls were generally above ten inches, and exceeded twelve at a few stations. In the lower Ohio valley, Tennessee, Iowa, and the greater part of Nebraska, there was very little snow during the month. Florida and Louisiana are the only states in which no snow fell during the month.

Below are given all monthly snowfalls of ten inches, or more, and in states or territories where the maximum depth was below that amount, the station reporting the greatest is given: *Alabama.*—Troy, 0.1. *Arizona.*—Williams, 17; Prescott, 12; Cedar Springs, 11.2. *Arkansas.*—Ozone, 6. *California.*—Summit, 15; Cisco, 14; Emigrant Gap, 11. *Colorado.*—Ouray, 14.3; Glenwood Springs, 12.8; Rifle Falls, 12.1; T. S. Ranch, 11. *Connecticut.*—New London, 12. *Dakota.*—Bismarck, 15.7; Rapid City, 13.5; Grand Forks and Spearfish, 12.5; Webster, 12; Huron, 11.1; Kimball, 10. *Delaware.*—Newark, 1.8. *District of Columbia.*—Washington City, 3.5. *Georgia.*—Athens, 7.5. *Idaho.*—Fort Sherman, 8. *Illinois.*—Lake Forest, 19.2; Fort Sheridan, 19; Kankakee, 13.2; Mahomet, 10.9; Griggsville, Philo, and Springfield, 10.6; Pekin, 10.5; Rockford, 10.4; Belvidere, Dwight, and Pana, 10. *Indiana.*—Columbia City, 12.8; Huntertown, 11.8. *Indian Territory.*—Fort Reno and Tulsa, 1. *Iowa.*—Cromwell, 12.5; Clear Lake, 11.5; Davenport, 10.1. *Kansas.*—Winfield, 12; Grenola, 10. *Kentucky.*—Catlettsburgh, 8. *Maine.*—Kent's Hill, 33; Orono, 28.3; Eastport, 24.9; Cornish, 20; Lewiston, 19; Gardiner, 18; Bar Harbor, 15.5; Belfast, 14. *Maryland.*—Fort McHenry, 8. *Massachusetts.*—Nantucket *b*, 18; Royalston, 13.1; Gilbertville and Provincetown, 13; Williamstown, 11.4; Nantucket *a*, 11; Brewster, Deerfield, Cotuit, and Middleborough, 10. *Michigan.*—Bear Lake, 44.2; Fremont, 41.2; Benzonia and Calumet, 39; Traverse City, 37.5; Deer Lake, 37; Atlantic, 35; Manistee, 33.4; Hart, 29.5; Benton Harbor, 28; Berrien Springs, 27.8; Cassopolis and Montague, 27; Alpena, 26.9; Grand Haven, 25.4; Marquette, 23.7; May, 23.5; Harrisville, 23; Big Rapids, 22; Northport, 21.8; Alma, 21.5; Roscommon, 20.7; East Saginaw, 20.3; Omer, 20; Gulliver Lake and Vandalia, 19.4; Colon and East Tawas, 18; Hastings, 17.9; Stanton, 17.8; Lathrop, 16.3; Flint, 15.5; Hillman and Marshall, 15; Port Huron, 14.8; Worthington, 14.7; Swartz Creek, 14.4; Gladwin, 14.2; Berlin, Bronson, Eden, Paw Paw, and Thomasville, 14; State Capitol, 13.8; Highland Station, 13.5; Fort Wayne, 13.3; Lansing, Kalamazoo, and Olivet, 13.2; Sand Beach, 13.1; Hudson and Williamston, 13; Corunna and Ypsilanti *b*, 12.5; Sault de Ste. Marie, 11.7; Saint John's, 11.6; Mottville, 11.2; Ovid, 11; Ypsilanti *a*, 10.9; Adrian, 10. *Minnesota.*—Pokegama Falls, 17.3; Duluth, 15.2; Lake Winnebago and Leech Lake, 14.6; Minneapolis, 13.1; Saint Paul, 12; Delano, 11. *Mississippi.*—Palo Alto and Pontotoc, trace. *Missouri.*—Springfield *a*, 13; Springfield *b*, 11; Fox Creek and Pierce City, 10.5; Harrisonville, 10.3. *Montana.*—Fort Keogh, 16.8; Fort Maginnis, 16.6; Fort Missoula, 11.4; Sheldon, 10.9. *Nebraska.*—Valentine, 12.5. *Nevada.*—Burner's Ranch, 26; Pioche, 12. *New Hampshire.*—North Conway, 26; Berlin Mills, 21; Plymouth, 20; Hanover, 19; Walpole and West Milan, 18; North Sutton, 14.5; Antrim and Concord, 12; Manchester *c*, 11; Chesterfield, Manchester *a*, and Manchester *b*, 10. *New Jersey.*—South Orange, 10. *New Mexico.*—Fort Wingate, 19.2; Coolidge, 14. *New York.*—Lowville, 71.4; Barnes' Corners, 69.6; Number Four, 54.2; Constableville, 49; Utica, 44.2; Potsdam, 41; Oswego, 37.2; Saranac Lake, 35.2; North Hammond, 28.6; Eden, 26.5; Buffalo, 26.1; Palermo, 26; Nineveh, 25; Ilion, 23.6; Hess Road Station, 23.3; Canton, 23.1; Rochester, 22; Wedgewood, 21; Fort Porter, 20.3; Queensbury, 20; South Canisteo, 16; Perry City, 15.9; Humphrey, 15.5; Geneva, 15.2; Angelica, 15; Le Roy, 14.9; Friendship, 14.5; Factoryville, 13.9; Cooperstown, 13; Penn Yan, 11; Ithaca, 10.7; Lyons, 10.5; White Plains, 10. *North Carolina.*—Mount Pleasant, 11.2; Southern Pines, 10.9; Chapel Hill, 10.5; Raleigh, 10.3. *Ohio.*—Wauseon, 19.1; Ruggles, 18; Canton, 17.5; Kent, 17; Napoleon, 12.2; Gracey, 11.8; Worcester, 11.4; Garrettsville, 10.6; Tiffin, 10.5. *Oregon.*—Tillamook, 4.5. *Pennsylvania.*—Salem Corners, 21.1; Pleasant Mount, 19.5; Philipsburgh, 17.8; Wellsborough, 17.6; Grampian Hills, 17; Troy, 15.5; Nesbit, 15; Blooming Grove, 13.5; Erie, 13; Le Roy, 11.3. *Rhode Island.*—Kingston, 9. *South Carolina.*—Belmont and Clinton, 14; Aiken, 13; Yorkville, 12.8; Cedar Springs and Statesburgh, 10. *Tennessee.*—Rogersville, 5.2. *Texas.*—Fort Elliott, 2.2. *Utah.*—Fort Douglas, 10.5. *Vermont.*—Strafford, 36; Northfield, 28.8; Middlebury, 28.4; Chelsea, 26; Jacksonville and Saxton's River, 20; Lunenburgh, 18; Brattleborough, 16; Burlington, 15; Cornwall and East Berkshire, 14; Vernon, 10. *Virginia.*—Lynchburgh, 10.7. *Washington Territory.*—Fort Canby, 5. *West Virginia.*—Middlebrook, 32; Hartmonsville, 18. *Wisconsin.*—Portage, 61; Embarrass, 32.8; Manitowoc, 28.6; Oshkosh, 17.5; Milwaukee, 16.3; Green Bay, 16.2; Delavan, 14.2; Weston, 13.4; Glasgow, 12.5; Waucousta, 12. *Wyoming.*—Camp Sheridan, 17.5; Fort McKinney, 12.5.

DEPTH OF SNOW REMAINING ON GROUND ON 15TH AND AT CLOSE OF MONTH.

With the exception of limited areas in the central Rocky Mountain and plateau regions the portions of the country covered by snow on the 15th were confined principally to the extreme northern districts from Dakota eastward to New England. In the valley of the Red River of the North, and in the extreme northern portions of Minnesota, Michigan, New York, Vermont, and New Hampshire, the depths ranged from ten to twenty inches. In western Kansas there was a small area over which there were from two to five inches.

On chart v are shown the portions of the country covered by snow at the close of February. It will be seen that with the exception of West Virginia there was no appreciable amount south of the fortieth parallel at the close of the month. In the extreme northern districts from Dakota eastward the depths ranged from six inches upwards. Over a considerable area embracing the northern portions of Michigan and Wisconsin there were from fifteen to thirty inches, and similar depths covered portions of New York and New England. An extreme depth of seventy-two inches was reported from Barnes' Corners, N. Y.

EXCESSIVE PRECIPITATION, FEBRUARY, 1889.

During February no station within the United States or Canada reported a monthly rainfall amounting to ten inches, the largest amount being 7.78 at Neah Bay, Wash.

Daily falls of 2.50 inches or more during the month were confined to the states of Alabama, Georgia, North Carolina, Pennsylvania, South Carolina, Tennessee, and Texas. Of the twenty-six measurements of rainfalls in excess of 2.50 inches recorded, twenty-two occurred between the 15th and 18th, the remaining four occurring on the 27th and 28th. The fall of 4.51 at Statesville, S. C., on the 18th, was the heaviest.

In five instances there were hourly rainfalls of more than 1.00 inch. One of these occurred on the 9th, three on the 17th, and one on the 18th. Two were recorded at the same station, viz., Diamond, Ga., and the others at Wilmington, N. C., Knoxville, Tenn., and Galveston, Tex., respectively. The fall of 2.22 in one hour and thirty minutes at Diamond, Ga., on the 17th, gives the highest rate per hour, 1.48.

Table of excessive precipitation, February, 1889.

State and station.	Monthly rainfall 10 inches or more.	Rainfall 2.50 inches, or more, in 24 hours. Amt.	Day.	Rainfall of 1 inch, or more, in one hour. Amt.	Time.	Day.
Alabama.	*Inches.*	*Inches.*		*Inches*	*h. m.*	
Decatur		3.10	15-16			
Motes		4.04	15-16			
Valley Head		2.90	16			
Georgia.						
Diamond		3.50	15	2.22	1 30	17
Do		3.90	18	3.90	3 00	18
Marietta		2.55	17			
Milledgeville		2.80	15			
Quitman		3.50	15			
North Carolina.						
Murphy		3.20	16			
Statesville		4.51	18			
Wilmington				1.04	1 00	17
Pennsylvania.						
Pleasant Mount		3.50	16-17			
Do		2.50	18			
South Carolina.						
Belmont		2.82	17			
Tennessee.						
Charleston		3.14	15-16			
Chattanooga		3.36	15-16			
Fayetteville		3.00	16			
Kingston		2.90	15-16			
Knoxville		2.71	17-18	2.00	1 30	17
Lookout Mountain		3.10	16			
Parksville		2.93	15			
Rockwood		2.85	15-16			
Springdale		2.50	16			
Texas.						
Brownwood		2.81	28			
Camp Pena Colorado		4.50	27			
Cleburne		3.75	27-28			
Corsicana		3.67	27-28			
Galveston				1.40	1 00	9
New Braunfels		2.53	28			
Reports received too late for January Review.						
New York.						
Brooklyn		3.77	27-28			
Texas.						
Victoria	10.05	3.00	7-8			

SUMMARY OF EXCESSIVE PRECIPITATION.

The following table gives the aggregate number of excessive monthly, daily, and hourly rainfalls reported at regular stations of the Signal Service during the periods of observation, and the average interval of their occurrence:

State and station.	Rainfalls of 10 inches, or more, a month.	Average interval of occurrence.	Rainfalls of 2.50 inches, or more, a day.	Average interval of occurrence.	Rainfalls of 1 inch, or more, an hour.	Average interval of occurrence.	Length of record.
Alabama.		*Yrs. Mos.*		*Yrs. Mos.*		*Yrs. Mos.*	*Yrs.*
Auburn	1	1 0	5	0 2	0	.....	1
Mobile	19	1 0	71	0 3	16	1 2	19
Montgomery	9	1 9	40	0 5	11	1 5	16
Arizona.							
Fort Apache	0	.....	2	5 0	9	1 1	10
Fort Bowie	0	.....	0	.....	0	.....	5
Fort Grant	0	.....	3	3 4	6	1 8	10
Fort McDowell	0	.....	1	5 0	0	.....	5
Fort Thomas	0	.....	0	.....	1	8 0	8
Fort Verde	0	.....	0	.....	0	.....	12
Maricopa	0	.....	0	.....	0	.....	3
Phœnix	0	.....	0	.....	0	.....	9
Prescott	0	.....	2	6 0	0	.....	12
Yuma	0	.....	0	.....	0	.....	13
Arkansas.							
Fort Smith	1	6 0	8	0 9	1	6 0	6
Little Rock	5	1 10	25	0 4	12	0 9	9
California.							
Eureka	1	2 0	1	2 0	0	.....	2
Fort Bidwell	0	.....	0	.....	0	.....	5
Fresno	0	.....	0	.....	0	.....	1
Los Angeles	2	5 6	12	0 11	9	1 3	11
Keeler	0	.....	0	.....	0	.....	3
Red Bluff	4	2 9	5	2 2	1	11 0	11
Sacramento	3	3 8	8	1 4	0	.....	11
San Diego	0	.....	4	4 3	0	.....	17
San Francisco	6	3 2	15	1 3	0	.....	19
Campo	0	.....	0	.....	1	5 0	5
Visalia	0	.....	0	.....	0	.....	6
Colorado.							
Colorado Springs	0	.....	2	1 6	0	.....	3
Denver	0	.....	2	9 6	3	6 4	19
Las Animas	0	.....	1	5 0	4	1 3	5
Montrose	0	.....	0	.....	0	.....	4
Pike's Peak	3	4 8	6	2 4	0	.....	14

Aggregate number of rainfalls—Continued.

State and station.	Rainfalls of 10 inches, or more, a month.	Average interval of occurrence.	Rainfalls of 2.50 inches, or more, a day.	Average interval of occurrence.	Rainfalls of 1 inch, or more, an hour.	Average interval of occurrence.	Length of record.
Connecticut.		*Yrs. Mos.*		*Yrs. Mos.*		*Yrs. Mos.*	*Yrs.*
Hartford	1	13 0	10	1 4	0	.....	13
New Haven	6	2 8	29	0 7	1	16 0	16
New London	3	6 0	21	0 10	4	4 6	18
Dakota.							
Bismarck	0	.....	1	14 0	0	.....	14
Fort Buford	0	.....	1	10 0	1	10 0	10
Huron	0	.....	0	.....	4	1 9	7
Fort Totten	0	.....	2	2 6	0	.....	5
Yankton	0	.....	9	1 8	4	3 9	15
District of Columbia.							
Washington City	4	4 6	13	1 5	7	2 7	18
Florida.							
Cedar Keys	10	0 10	29	0 3	12	0 8	8
Jacksonville	12	1 7	49	0 5	28	0 8	19
Jupiter	0	.....	2	0 6	0	.....	1
Key West	5	3 10	31	0 7	11	1 9	19
Lake City	6	0 6	0	.....	0	.....	3
Pensacola	7	1 3	41	0 3	5	1 10	9
Sanford	4	1 0	0	.....	0	.....	4
Titusville	0	.....	6	0 2	7	0 2	1
Georgia.							
Atlanta	9	1 0	20	0 5	6	1 6	9
Augusta	2	9 6	26	0 3	10	1 11	19
Savannah	9	2 1	41	0 6	16	1 2	19
Idaho.							
Boise City	0	.....	0	.....	0	.....	11
Fort Sherman	0	.....	0	.....	0	.....	6
Illinois.							
Cairo	3	5 9	23	0 9	16	1 1	17
Chicago	1	19 0	13	1 6	5	3 10	19
Springfield	3	2 8	13	0 7	7	1 2	8
Indiana.							
Indianapolis	4	4 9	18	1 1	28	0 8	19
Terre Haute	0	.....	1	1 0	0	.....	1
Iowa.							
Davenport	1	19 0	14	1 4	15	1 3	19
Dubuque	2	7 6	21	0 9	10	1 6	15
Des Moines	2	5 0	18	0 7	12	0 10	10
Keokuk	2	8 6	18	0 11	9	1 11	17
Indian Territory.							
Fort Reno	0	.....	8	0 9	0	.....	6
Fort Sill	0	.....	7	1 5	2	5 0	10
Fort Supply	0	.....	1	11 0	0	.....	11
Kansas.							
Dodge City	1	14 0	7	2 0	11	1 3	14
Concordia	0	.....	0	.....	0	.....	3
Leavenworth	2	9 6	27	0 8	12	1 7	19
Topeka	0	.....	9	0 3	2	1 0	2
Kentucky.							
Lexington	0	.....	1	1 0	1	1 0	1
Louisville	3	5 8	21	0 10	14	1 3	17
Louisiana.							
New Orleans	16	1 2	60	0 4	13	1 5	18
Shreveport	8	2 2	43	0 5	21	0 10	17
Maine.							
Eastport	1	14 0	1	14 0	2	7 0	14
Portland	0	.....	16	1 1	2	8 6	17
Maryland.							
Baltimore	1	19 0	22	0 10	12	1 7	19
Massachusetts.							
Boston	3	6 4	27	0 8	1	19 0	19
Nantucket	0	.....	1	2 0	2	1 0	2
Springfield	5	1 7	5	1 7	0	.....	8
Vineyard Haven	0	.....	2	1 0	2	1 0	2
Wood's Holl	1	9 0	2	4 6	0	.....	9
Michigan.							
Alpena	2	8 0	4	4 0	5	3 2	16
Detroit	0	.....	3	6 4	8	2 4	19
Escanaba	1	17 0	5	3 5	3	5 8	17
Grand Haven	0	.....	11	1 7	11	1 7	17
Lansing	0	.....	0	.....	1	2 0	2
Mackinaw City	0	.....	3	1 4	0	.....	4
Marquette	1	17 0	4	4 3	3	5 8	17
Port Huron	0	.....	1	14 0	2	7 0	14
Minnesota.							
Duluth	4	4 6	3	6 0	0	.....	18
Moorhead	0	.....	5	1 7	4	2 [illegible]	8
Saint Vincent	0	.....	8	1 0	5	1 7	8
Saint Paul	1	19 0	5	3 10	6	3 2	19
Missouri.							
Lamar	0	.....	7	0 5	9	0 4	3
Saint Louis	1	18 0	19	0 11	5	3 7	18
Springfield	0	.....	2	1 0	1	2 0	2
Mississippi.							
University	0	.....	1	1 0	1	1 0	1
Vicksburg	13	1 4	43	0 5	6	2 11	17
Montana.							
Fort Assinaboine	0	.....	3	2 8	3	2 8	8
Fort Custer	0	.....	0	.....	1	9 0	9
Fort Maginnis	0	.....	3	1 8	0	.....	5
Helena	0	.....	1	7 0	0	.....	7
Poplar River	0	.....	0	.....	0	.....	6
Nebraska.							
Crete	0	.....	1	1 0	0	.....	1
North Platte	0	.....	2	7 0	7	2 0	14
Omaha	6	3 2	16	1 2	22	0 10	19
Valentine	0	.....	1	3 0	0	.....	3
Nevada.							
Pioche	0	.....	0	.....	0	.....	6

Aggregate number of rainfalls—Continued.

State and station.	Rainfalls of 10 inches, or more, a month.	Average interval of occurrence.	Rainfalls of 2.50 inches, or more, a day.	Average interval of occurrence.	Rainfalls of 1 inch, or more, an hour.	Average interval of occurrence.	Length of record.
Nevada—Continued.		Yrs. Mos.		Yrs. Mos.		Yrs. Mos.	Yrs.
Carson City	0	.....	0	.....	0	.....	1
Winnemucca	0	.....	0	.....	0	.....	9
New Hampshire.							
Manchester	0	.....	1	1 0	0	.....	1
Mount Washington	36	0 5	1	15 0	0	.....	15
New Jersey.							
Atlantic City	2	7 6	12	1 3	2	7 6	15
Barnegat City	3	4 0	6	2 0	0	.....	12
Cape May	3	4 4	5	2 7	0	.....	13
Little Egg Harbor	1	4 0	2	2 0	0	.....	4
Sandy Hook	5	2 5	7	1 9	0	.....	12
New Mexico.							
Fort Stanton	0	.....	0	.....	0	.....	4
Lava	0	.....	0	.....	0	.....	4
Santa Fe	0	.....	1	14 0	2	7 0	14
New York.							
Albany	0	.....	2	7 6	3	5 0	15
Buffalo	1	19 0	8	2 4	4	4 9	19
Oswego	1	19 0	11	1 9	0	.....	19
New York City	2	8 6	23	1 0	5	3 10	19
Rochester	0	.....	4	4 6	1	18 0	18
North Carolina.							
Charlotte	3	3 3	21	0 6	7	1 5	10
Fort Macon	2	3 0	7	0 10	0	.....	6
Hatteras	17	0 10	65	0 3	22	0 8	14
Kitty Hawk	9	1 7	17	0 10	0	.....	14
New River Inlet	1	1 0	7	0 2	0	.....	1
Portsmouth	1	4 0	8	0 6	1	4 0	4
Raleigh	3	0 8	2	1 0	4	0 6	2
Southport	4	3 3	17	0 9	2	6 6	13
Wilmington	10	1 8	59	0 4	24	0 9	18
Ohio.							
Cincinnati	0	.....	15	1 2	5	3 7	18
Cleveland	0	.....	11	1 9	5	3 10	19
Columbus	0	.....	4	2 6	5	2 0	10
Sandusky	1	10 0	5	2 0	6	1 8	10
Toledo	0	.....	2	9 0	9	2 0	18
Oregon.							
Ashland	0	.....	0	.....	0	.....	5
Astoria	9	0 7	5	1 0	0	.....	5
Fort Klamath	0	.....	0	.....	0	.....	3
Linkville	0	.....	0	.....	0	.....	5
Portland	22	0 10	14	1 4	0	.....	19
Roseburgh	1	10 0	7	1 5	0	.....	10
Pennsylvania.							
Erie	0	.....	8	1 10	5	3 0	15
Philadelphia	1	19 0	19	1 0	9	2 1	19
Pittsburgh	0	.....	11	1 8	19	1 0	18
Rhode Island.							
Block Island	1	8 0	13	0 7	3	2 8	8
Narragansett Pier	1	6 0	1	6 0	0	.....	6
Point Judith	0	.....	0	.....	0	.....	2
Newport	1	8 0	8	1 0	0	.....	8
South Carolina.							
Charleston	17	1 1	57	0 4	20	0 11	18
Columbia	0	.....	1	1 0	1	1 0	1
Tennessee.							
Chattanooga	5	2 0	27	0 4	21	0 6	10
Knoxville	6	3 0	31	0 7	28	0 6	18
Memphis	6	2 10	45	0 5	14	1 3	17
Nashville	3	6 0	20	0 11	21	0 10	18
Texas.							
Abilene	0	.....	1	3 0	2	1 6	3
Brownsville	7	1 10	34	0 5	10	1 4	13
Fort Davis	0	.....	5	1 10	3	3 0	9
Fort Elliott	0	.....	7	1 3	8	1 1	9
Fort Concho	3	2 4	6	1 2	2	3 6	7
Galveston	10	1 9	74	0 3	29	0 7	17
Corpus Christi	0	.....	2	1 0	2	1 0	2
Palestine	1	5 0	21	0 3	6	0 10	5
El Paso	0	.....	1	10 0	4	2 6	10
Rio Grande City	1	11 0	20	0 7	8	1 4	11
San Antonio	0	.....	5	1 10	8	1 1	9
Utah.							
Frisco	0	.....	0	.....	0	.....	2
Salt Lake City	0	.....	0	.....	0	.....	14
Fort Du Chesne	0	.....	0	.....	0	.....	1
Vermont.							
Northfield	0	.....	0	.....	0	.....	1
Burlington	0	.....	0	.....	0	.....	12
Virginia.							
Cape Henry	3	5 0	1	15 0	0	.....	15
Chincoteague	0	.....	0	.....	0	.....	7
Lynchburgh	3	6 0	12	1 6	9	2 0	18
Norfolk	2	9 6	27	0 8	6	3 2	19
Wytheville	0	.....	5	0 10	3	1 4	4
Washington Territory.							
Dayton	0	.....	1	6 0	0	.....	6
Fort Canby	7	0 9	3	1 8	0	.....	5
Neah Bay	17	0 3	.....	.....	.....	.....	4
Olympia	15	0 9	7	1 7	0	.....	11
Port Angeles	0	.....	0	.....	0	.....	5
Pysht	6	0 6	2	1 6	0	.....	3
Spokane Falls	0	.....	0	.....	0	.....	7
Tatoosh Island	21	0 3	39	0 2	0	.....	5
Walla Walla	0	.....	0	.....	0	.....	3
Wisconsin.							
Green Bay	0	.....	1	2 0	1	2 0	2
La Crosse	2	8 0	10	1 7	8	2 0	16

Aggregate number of rainfalls—Continued.

State and station.	Rainfalls of 10 inches, or more, a month.	Average interval of occurrence.	Rainfalls of 2.50 inches, or more, a day.	Average interval of occurrence.	Rainfalls of 1 inch, or more, an hour.	Average interval of occurrence.	Length of record.
Wisconsin—Continued.		Yrs. Mos.		Yrs. Mos.		Yrs. Mos.	Yrs.
Milwaukee	0	.....	5	3 10	5	3 10	19
Wyoming.							
Cheyenne	0	.....	0	.....	5	3 10	19
Fort Bridger	0	.....	0	.....	0	.....	4
Fort Laramie	0	.....	0	.....	0	.....	2
Fort McKinney	0	.....	0	.....	1	1 0	1
Fort Washakie	0	.....	0	.....	0	.....	1

The following results have been determined from records, which, in instances, represent combined records, furnished this office by voluntary observers or correspondents:

State and station.	Rainfall of 10 inches, or more, a month.	Average interval of occurrence.	Rainfalls of 1 inch, or more, an hour.	Average interval of occurrence.	Length of record.
California.		Yrs. Mos.		Yrs. Mos.	Yrs.
San Francisco	6	4 8	.....	.....	28
Sacramento	7	4 3	.....	.....	30
San Luis Obispo	4	3 0	.....	.....	12
Connecticut.					
Wallingford	5	6 2	.....	.....	31
District of Columbia.					
Washington City	12	4 2	.....	.....	50
Florida.					
Merritt's Island	11	0 9	.....	.....	8
Georgia.					
Macon	3	4 0	.....	.....	12
Illinois.					
Marengo	2	18 0	.....	.....	36
Indiana.					
Laconia	1	17 0	.....	.....	17
Wabash	0	.....	.....	.....	6
Indian Territory.					
Fort Gibson	4	8 3	.....	.....	33
Iowa.					
Hopkinton	1	11 0	.....	.....	11
Massachusetts.					
Cambridge (Harvard College)	3	9 4	.....	.....	28
New Bedford	4	18 9	.....	.....	75
Missouri.					
Saint Louis	9	4 11	.....	.....	44
Nebraska.					
Fort McPherson	0	.....	.....	.....	9
New Jersey.					
Newark	5	9 0	.....	.....	45
New York.					
Cooperstown	0	.....	.....	.....	34
New York City	.....	.....	66	0 3	19
Palermo	0	.....	.....	.....	28
Troy	2	29 6	.....	.....	59
New Hampshire.					
Hanover (Dartmouth College)	0	.....	.....	.....	21
New Mexico.					
Fort Union	3	9 4	.....	.....	28
Ohio.					
North Lewisburgh	1	16 0	.....	.....	16
Portsmouth	0	.....	.....	.....	26
Pennsylvania.					
Philadelphia	5	12 7	.....	.....	63
South Carolina.					
Kirkwood	2	10 0	.....	.....	20
Texas.					
New Ulm	13	1 2	.....	.....	15
Virginia.					
Snowville	3	4 8	.....	.....	14
Wytheville	0	.....	.....	.....	18
Wyoming.					
Fort Sanders	0	.....	.....	.....	10

In the above summary it has been possible to accurately show the average interval of excessive monthly and daily rainfalls as reported at regular stations of the Signal Service. As regards hourly excessive rainfalls, an absence in the past of recording or automatic gauges has rendered it possible and probable that many heavy rainfalls of short duration, more particularly when they have occurred during the progress of general storms, have not been noted.

The table shows that monthly rainfalls to equal or exceed ten inches have occurred most frequently in the extreme

northwest part of Washington, Neah Bay and Tatoosh Island having an average interval of three months. Exclusive of the north Pacific coast stations excessive monthly rainfalls have not been reported at intervals of less than one year, save at points along the North Carolina and Florida coasts, and at Mount Washington, N. H. In Arizona, Colorado (except at Pike's Peak), Dakota, Idaho, Indian Territory, Montana, Nevada, New Mexico, Utah, Vermont, and Wyoming, no monthly rainfalls of ten or more inches have been reported at regular stations of the Signal Service. Among the longer intervals noted are, nineteen years at Chicago, Ill., Baltimore, Md., Saint Paul, Minn., Buffalo and Oswego, N. Y., and Philadelphia, Pa.; eighteen years at Saint Louis, Mo.; seventeen at Escanaba and Marquette, Mich.; fourteen at Dodge City, Kans., and Eastport, Me.; eleven at Rio Grande City, Tex., and ten at Sandusky, Ohio, and Roseburgh, Oregon. The table of data made up from long-period records furnished by voluntary observers, shows an interval of eighteen years at Marengo, Ill.; seventeen at Laconia, Ind.; twenty-nine and one-half at Troy, N. Y.; twelve and one-half at Philadelphia, Pa., and ten for Kirkwood, S, C.

Rainfalls to equal or exceed two and one-half inches in twenty-four hours have occurred most frequently at stations along or near the south Atlantic and Gulf coasts, in Florida, and at Tatoosh Island, Wash., where they have been reported at intervals of two and three months. At points in Alabama, Arkansas, at Los Angeles, Cal., Connecticut, Florida, Georgia, Illinois, Iowa, Indian Territory, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, Missouri, North Carolina, Rhode Island, South Carolina, Tennessee, Texas, and Virginia the intervals varied from four to twelve months. In Idaho, Nevada, Utah, Vermont, and Wyoming excessive daily rainfalls have not been reported. At Bismarck and Fort Buford, Dak., Fort Supply, Ind. T., Eastport, Me., Port Huron, Mich., Mount Washington, N. H., Santa Fé, N. Mex., El Paso, Tex., and Cape Henry, Va., daily rainfalls of two and one-half or more inches have been reported at intervals of from ten to twenty years.

Rainfalls to equal or exceed one inch an hour have been most frequently reported at Titusville, Fla. (with a record of two years), and at the Central Park Meteorological Observatory, New York City (with a record of sixty-six years), where the interval has been two and three months, respectively. At stations in Arkansas, Florida, Indiana, Iowa, Louisiana, eastern Nebraska, North Carolina, western Pennsylvania, South Carolina, Tennessee, and Texas the intervals have varied from four to twelve months. In Nevada, New Hampshire, Oregon, Utah, Vermont, and Washington, no rainfalls of one inch, or more, have been reported at Signal Service stations. At Red Bluff, Cal., New Haven, Conn., Fort Buford, Dak., Boston, Mass., and Rochester, N. Y., excessive hourly rainfalls have been noted at intervals of from ten to twenty years.

WINDS.

The prevailing winds during February, 1889, are shown on chart i by arrows flying with the wind. In Canada, the Lake region, and generally in districts east of the Mississippi River, westerly winds were most frequently noted, except along the east and middle coasts of the Gulf of Mexico, where they were northeasterly. In Texas, the lower Mississippi valley, the Rocky Mountain regions, and the middle and southern Pacific slopes they were variable. On the north Pacific coast south to west winds predominated.

HIGH WINDS (in miles per hour).

Maximum velocities of fifty miles, or more, per hour, other than those given in the table of miscellaneous meteorological data, have been reported as follows: Fort Assinaboine, Mont., 56, nw., 4th; 66, nw., 3d; Whipple Barracks (Prescott), Ariz., 54, sw., 16th.

LOCAL STORMS.

The following reports generally refer to storms incidental to the passage of areas of low pressure of pronounced strength whose paths are plotted on chart i:

4th. *Nebraska.*—Omaha: a severe storm began at 6.30 a. m. and continued without cessation until about 7 p. m., causing loss of life and considerable damage to property in this city. Maximum velocity of wind, sixty miles per hour. Reports indicate that the storm was of unusual severity in neighboring towns.—*Report of Signal Service observer.*

13th. *Oregon.*—Shedd's, Linn Co.: a heavy hail storm prevailed for a short time; hail fell to a depth of one inch; some of the stones were one-fourth of an inch in diameter. Lebanon, Linn Co.: quite a hail storm, a few miles in width, was experienced; very little damage was done.—*Oregon Crop-Weather Bulletin.*

16th. *Michigan.*—Sault de Ste. Marie: a severe sleet storm, accompanied by high wind, occurred in the afternoon. Telegraph and telephone wires became heavily coated with ice, cutting off communication with Detroit. Houses on the west side of the street were coated with ice half an inch thick, and all outside business was abandoned during the storm.—*Report of Signal Service observer.*

16–17th. *Tennessee.*—The (Nashville) "Daily American," of February 18th, contains the following: a terrific rain storm prevailed between Dark's Mill, Maury Co., and Pulaski, Giles Co., the night of the 16th; it was almost equal to a waterspout in that region. Streams were filled to overflowing, and, in many cases, out-houses in close proximity to the creeks were swept away by the torrents of water. The false work under the proposed new and heavy iron bridge over Rutherford Creek, on the Decatur division, ten miles south of Columbia, was partially swept away.

17–18th. *Tennessee.*—Knoxville: a heavy thunder-storm began 10.30 p. m., 17th, and ended 4 a. m. the following day. The storm was attended by very heavy rain, and the overflow of creeks inundated streets, flooded cellars, etc., in this city.—*Report of Signal Service observer.*

18th. *Alabama.*—Birmingham: about 2 a. m. a storm swept over the lower end of Shelby county, about thirty miles from this city. Many houses were blown down or unroofed; a number of persons were killed and many injured. The storm moved from southwest to northeast, through a thickly populated section.—*The New York Times, February 19th. Georgia.*—Harmony Grove, Jackson Co.: about 4.30 a. m. a terrible storm swept across the southeast corner of Banks county, and for violence and damage it was perhaps the most fearful wind storm ever experienced in this section. Houses and trees were driven before the wind like chaff; several persons were killed and a large number injured. The course of the storm was from southwest toward northeast. Persons on the Elberton Air Line state that it crossed that road between Bowersville, Hart Co., and Toccoa, Habersham Co. It is a singular fact that this storm passed in the track of one which occurred in 1846; a hurricane, as it was then called, swept through a large forest and tore up many trees.—*Athens (Ga.) Banner-Watchman.* Griffin, Spaulding Co.: a storm struck this place at 5 a. m., and did considerable damage; it came from the west, and was about three hundred yards wide. At a farm two miles west from here five houses were blown down, and a large barn filled with forage was twisted around.—*Atlanta (Ga.) Constitution.* Eatonton, Putnam Co.: a terrific storm passed a few miles from this place at 7 a. m. The funnel-shaped cloud, as far as can be learned, did its greatest damage in the neighborhood of Nona, this county, on the